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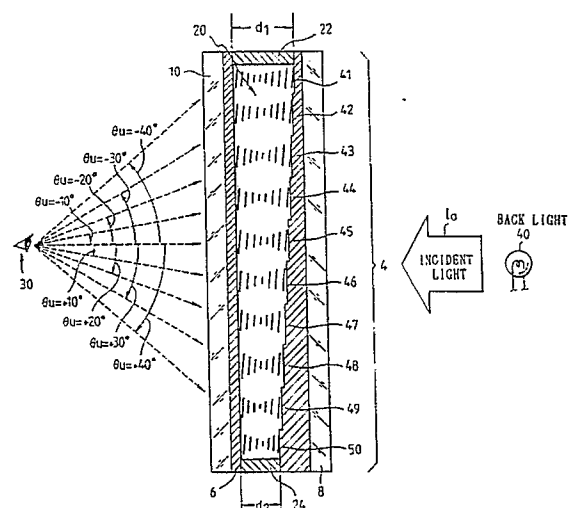
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(54) **Liquid crystal display.**

(57) A liquid crystal display which has a small change in contrast ratio and a black level (i.e. background color) when a view point is changed in the upper and lower direction. A nematic liquid crystal material is disposed between two plates (6,4), the plates are oriented (for example rubbed) to cause the liquid crystal material to define a twisted structure in the direction perpendicular to the plates, and the direction of the orientation of the plates is selected so that the normal direction viewing is identical with the direction in which the twisted structure is lost when a voltage is applied across the liquid crystal material. When the direction of viewing is the lower direction, an optical path difference between the plates in the upper area of the liquid crystal display is larger than an optical path difference between the plates in the lower area of the liquid crystal display. When the direction of viewing is the upper direction, an optical path difference between the plates in the upper area of the liquid crystal display is smaller than an optical path difference between the plates in the lower area of the liquid crystal display.

6 ... FRONT ELECTRODE
8 ... REAR GLASS SUBSTRATE
10 ... FRONT GLASS SUBSTRATE
20 ... TN LIQUID CRYSTAL MATERIAL
22 ... UPPER SEAL
24 ... LOWER SEAL
41-50 ... REAR ELECTRODE



A SECTIONAL VIEW OF A TWISTED NEMATIC LIQUID CRYSTAL DISPLAY AS AN EMBODIMENT OF THE PRESENT INVENTION
FIG. 1

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EUROPEAN SEARCH REPORT

Application Number

EP 90 85 0261

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	MOLECULAR CRYSTALS AND LIQUID CRYSTALS, vol. 123, 1985, pages 15-55, Montreux, CH; T. UCHIDA. "Application and device modeling of liquid crystal displays" * Sections 2-4 *	1,4,6	G 02 F 1/1343
A	IBM TECHNICAL DISCLOSURE BULLETIN, vol. 15, no. 4, September 1972, page 1349, New York, US; C.P. LUDEMAN et al.: "Liquid-crystal cell having non-uniform thickness" * Whole document *	1-3,6	
A	PATENT ABSTRACTS OF JAPAN, vol. 9, no. 285 (P-404)[2008], 12th November 1985; & JP-A-60 126 623 (MATSUSHITA DENKI SANGYO) 06-07-1985 * Whole document *	1,3,6	
A	PATENT ABSTRACTS OF JAPAN, vol. 5, no. 173 (P-87)[845], 5th November 1981; & JP-A-56 102 828 (SUWA SEIKOSHA) 17-08-1981 * Abstract; figure 2 *	1,3,6	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			G 02 F
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of search 02 August 91	Examiner STANG I.
<div>CATEGORY OF CITED DOCUMENTS</div> <div>X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention</div> <div>E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons &: member of the same patent family, corresponding document</div>			